

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

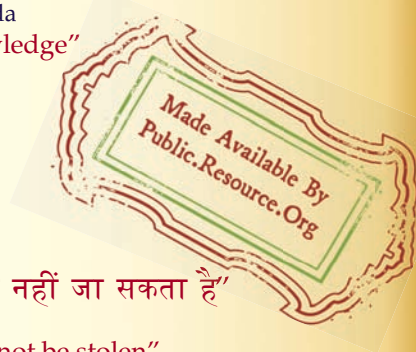
IS/ISO 9177-2 (1989): Mechanical Pencils, Part 2: Black Leads - Classification and Dimensions [PGD 22: Educational Instruments and Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



भारतीय मानक
यांत्रिक पेन्सिलें

भाग 2 काला सीसा — वर्गीकरण और आयाम

Indian Standard
MECHANICAL PENCILS

PART 2 BLACK LEADS — CLASSIFICATION AND DIMENSIONS

ICS 01.100.40

© BIS 1996

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard (Part 2) which is identical with ISO 9177-2 : 1989 'Mechanical pencils — Part 2 : Black leads — Classification and dimensions', issued by International Organisation for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Optical and Mathematical Instruments Sectional Committee and approval of Light Mechanical Engineering Division Council.

This standard is being published in following three parts:

IS/ISO 9177-1 : 1989 Mechanical pencils — Part 1 : Classification, dimensions, performance requirements and testing

IS/ISO 9177-2 : 1989 Mechanical pencils — Part 2 : Black leads — Classification and dimensions

IS/ISO 9177-3 : 1994 Mechanical pencils — Part 3 : Black leads — Bending strength of HB leads

The text of ISO Standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a full stop (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 128 : 1982	IS 10714 : 1983 General principles of presentation on technical drawings	Identical
ISO 9177-1 : 1989	IS/ISO 9177-1 : 1989 Mechanical pencils — Part 1 : Classification, dimensions, performance requirements and testing	Identical

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MECHANICAL PENCILS

PART 2 BLACK LEADS — CLASSIFICATION AND DIMENSIONS

1 Scope and field of application

This part of ISO 9177 specifies a classification and dimensions for black leads used for mechanical pencils.

Two types of black leads are available :

- polymer leads (designated by the letter "P")
- ceramic leads (designated by the letter "C")

2 References

ISO 128, *Technical drawings — General principles of presentation*.

ISO 9177-1, *Mechanical pencils — Part 1: Classification, dimensions, performance requirements and testing*.

3 Definitions

For the purposes of this part of ISO 9177, the definition given in ISO 9177-1 and the following definitions apply.

3.1 black lead : Solid writing material which consists of carbon (e.g. graphite) and a binding agent. The lead generates black lines which are erasable.

3.1.1 polymer lead : Black lead in which the binding agent is an organic polymer.

3.1.2 ceramic lead : Black lead in which the binding agent is clay.

3.2 hardness degree : Classification indicating increasing hardness from 6B to 9H and increasing line density from 9H to 6B. The median hardness degree is HB.

NOTE A scientific definition of hardness degree is not yet available.

4 Classification

Leads shall be classified according to the hardness degree (see table 1), to the nominal diameter (see clause 5) and to the type of black lead (i.e. polymer or ceramic).

Table 1 — Classification according to hardness degree

Nominal diameter mm	Hardness degree (see 3.2)
0,35 0,5 0,7 1	6H, 5H, 4H, 3H, 2H, H, F, HB, B, 2B
2	9H, 8H, 7H, 6H, 5H, 4H, 3H, 2H, H, F, HB, B, 2B, 3B, 4B, 5B, 6B

5 Dimensions

5.1 Diameters

Lead diameters shall be as specified in table 2.

NOTE — This table 2 is identical to table 2 in ISO 9177-1.

Table 2 — Diameters

Line thickness according to ISO 128	Lead diameter Dimensions in millimetres	
	Nominal diameter	Actual diameter and tolerance of the mechanical pencil lead
0,25 ¹⁾	—	—
0,35	0,35 ²⁾	0,35 +0,04 +0,02
0,5	0,5	0,5 +0,08 +0,05
0,7	0,7	0,7 +0,03 −0,01
1	1 ²⁾	1 −0,08 −0,12
1,4 ¹⁾	—	—
2	2	2 ±0,05

1) At present the corresponding leads are not available.

2) Current practice is to label or mark mechanical pencils and boxes 0,3 and 0,9 as applicable. The user should note that leads with new standardized designations apply perfectly well to pencils with the old designations and vice versa; i.e. 0,35 and 1 correspond respectively to 0,3 and 0,9.

5.2 Lengths

Lead lengths shall be as specified in table 3.

Table 3 — Lengths

Dimensions in millimetres

Lead type	Nominal diameter	Length	Type of mechanism of mechanical pencil (see ISO 9177-1)
P or C	0,35 0,5 0,7 1	60 ± 1	F
		or	
		90 ± 1	
		or	
		100 ± 1	S
		30 ± 1	
	2	or	L
		45 ± 1	
		25 ± 1*	
		or	
		130 ± 1	

* Length used for compasses.

6 Designation

The designation of black leads for mechanical pencils shall comprise, in the order given, the following elements :

- "Black lead";
- the number of this part of ISO 9177 (i.e. ISO 9177-2);
- the type classification letter (i.e. P or C);
- the nominal diameter, in millimetres;
- the length, in millimetres.

The designation shall be clearly indicated on the packaging and, if possible, on the lead ¹⁾.

Designation examples :

A polymer lead complying with the requirements of this part of ISO 9177 and having a nominal diameter of 0,5 mm and a length of 60 mm shall be designated as follows :

Black lead ISO 9177-2-P-0,5-60

A ceramic lead complying with the requirements of this part of ISO 9177 and having a nominal diameter of 2 mm and a length of 130 mm shall be designated as follows :

Black lead ISO 9177-2-C-2-130

1) Where there is lack of space, only the number of this part of ISO 9177 (i.e. ISO 9177-2) should be shown.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. LM 20 (0264).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 323 01 31, 323 94 02, 323 83 75

Telegrams: Manaksanstha
(Common to
all offices)

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 323 76 17
323 38 41

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 337 84 99, 337 85 61
337 86 26, 337 86 62

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43
60 20 25

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400093

{ 832 92 95, 832 78 58
832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR.
COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD.
JAIPUR. KANPUR. LUCKNOW. PATNA. THIRUVANANTHAPURAM.